

ADDITIONAL NOTES ON THE ERIOCAULACEAE. LXVI

Harold N. Moldenke

PAEPALANTHUS SUBTILIS Miq.

Additional bibliography: Moldenke, *Phytologia* 35: 35-36. 1976.

Gleason, in his unpublished Flora of British Guiana, gives this species' overall distribution as "Surinam to northern Brazil". Prance encountered it on "flooded sandy beach in black water", fruiting in February.

Ruhland (1903) cites for the typical form of this species: GUYANA: R. Schomburgk 236. SURINAM: Focke s.n., Weigelt s.n., Wizell s.n. (V). BRAZIL: Amaz nas: Schwacke 4086, Spruce 2743. Bahia: Salzmann s.n. Par : Burchell 9354, Huber 161, Sieber s.n., Spruce s.n., all in the Berlin herbarium except for the Wizell collection.

It is possible that the Eriocaulon arenarium Salzm., listed in the synonymy of P. subtilis, may actually belong, rather, in the synonymy of P. parvus Ruhl. since the type specimen of P. parvus is an unnumbered Salzmann collection labeled as "Eriocaulon arenarium Mart."

Material of P. subtilis has been misidentified and distributed in some herbaria as P. polytrichoides H.B.K. On the other hand, the W. A. Egler 47650, distributed as P. subtilis, is actually a mixture of P. oyapockensis Herzog and Syngonanthus glandulosus Gleason. The Ruiz-Ter n & L pez-Palacios 11222a, cited below, is a mixture with Syngonanthus simplex (Miq.) Ruhl. Carrick 973 is S. gracilis (Bong.) Ruhl. and Carrick 985 is S. simplex.

Additional citations: VENEZUELA: Amazonas: Araque Molina & Barkley 18V186 (K, W--2683129); J. A. Steyermark 58447 (S). Bolivar: Merxm ller 22954 (Mu); Ruiz-Ter n & L pez-Palacios 11222a, in part (Ac); J. A. Steyermark 86841 (Fg, N, Ve, Ve), 89700 (Mi); Steyermark, Steyermark, Wurdack, Wurdack, & Wiehler 106608 (Ld); G. H. H. Tate 1310 (N). GUYANA: C. B. Clarke s.n. [1897] (N); D. H. Davis 156 (N); S. G. Harrison 1050 (K), 1398 (K); Herb. U. G. Bio. 106-21 (N); Jerman 5170 (W--45357, W--936262); R. Schomburgk 236 (B, Ut--420, W--702595). SURINAM: Donselaar & Donselaar 408 (Ut--93608B); Florsch tz & Florsch tz 170 (Ut--80220B); Focke 1319 (Ut--380--type); Lanjouw & Lindeman 2984a (Ut--17888B), 3012 (Ut--17887B); Lindeman 4021 (W--2734383), 4193 (N); Pulle 539 (Ut--44058A); Schweinitz s.n. (T); Went 367 (Ut--380). BRAZIL: Amap : Black & Fr es 51-12358 (Be--70179), 51-12401 (Be--70222); W. A. Egler 47650 (Ac, N); Maguire, Mur a Pires, & Maguire 47129 (N, S); Mur a Pires, Rodrigues, & Irvine 51062 (N). Amaz nas: Prance, Steward, Ramos, Fidalgo, & Prance 20201 (Ld); M. Silva 965 [Herb.

Mus. Goeldi 32812] (N); Spruce 1503 (N, S, S), 2743 (B). Bahia: Salzmann s.n. [Bahia, in sabulosis aridis] (Br). Goiás: Hatschbach & Kummrow 38415 (Ld); Irwin, Grear, Souza, & Reis dos Santos 13483 (Ld, N, W--2759040). Maranhão: Murça Pires & Black 2340 (N). Pará: Archer 8441 (Be--11790, Mm, N, Sm, W--2199906, W--2278318); G. A. Black 860 (N), 52-15559 (Z); Burchell 9254 (Br, W--33275); Ducke s.n. [Herb. Mus. Goeldi 10806] (Z); Huber 1616 (Ut--1656); D. A. Lima 53-1337 (Be--8-869); Murça Pires & Silva 4243 (N, N), 4271 (N); Sieber s.n. [Pará, Bras.] (Br, N--photo, Z--photo); Spruce 609 (Mu), s.n. [Prope Santarem, Mart. 1850] (S, S). Rio Grande do Norte: Tavares 327 (W--2692387). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

PAEPALANTHUS SUBTILIS var. HIRSUTUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 157 [as "hirsuta"]. 1903.

Synonymy: Paepalanthus subtilis var. α Körn. in Mart., Fl. Eras. 3 (1): 358--359. 1863. Paepalanthus subtilis var. hirsuta Ruhl. in Engl., Pflanzenreich 13 (4-30): 157. 1903. Paepalanthus subtilis var. Körn. ex Ruhl. in Engl., Pflanzenreich 13 (4-30): 157, in syn. 1903.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 358--359. 1863; Ruhl. in Engl., Pflanzenreich 13 (4-30): 157 & 292. 1903; Moldenke, Known Geogr. Distrib. Erioc. 7 & 54. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 67 & 212. 1949; Moldenke, Résumé 77, 102, 328, & 490. 1959; Moldenke, Fifth Summ. 1: 132 & 167 (1971) and 2: 591 & 958. 1971; Moldenke, Phytologia 30: 318 (1975) and 31: 405. 1975.

This variety is based on an unnumbered Kegel collection from "an sandigen Stellen nahe Mariepaston", Surinam, probably deposited in the Berlin, Munich, or Göttingen herbaria. Ruhland (1903) describes it as "Differt a forma typical foliis dense et longe persistenti-ciliatis, pedunculis longe patenti-hirsutis". He cites only the original collection.

Citations: BRAZIL: Pará: W. A. Egler 309 (Z).

PAEPALANTHUS SUBTILIS var. PUBERULUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 157 [as "puberula"]. 1903.

Synonymy: Paepalanthus subtilis var. β Körn. in Mart., Fl. Eras. 3 (1): 358--359. 1863. Paepalanthus subtilis var. puberula Ruhl. in Engl., Pflanzenreich 13 (4-30): 157. 1903.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 358--359. 1863; Ruhl. in Engl., Pflanzenreich 13 (4-30): 157 & 292. 1903; Moldenke, Known Geogr. Distrib. Erioc. 16 & 54. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Phytologia 4: 205. 1953; Moldenke, Résumé 102, 328, & 490. 1959; Moldenke, Fifth Summ. 1: 167 (1971) and 2: 591 & 958. 1971.

This variety is based on an unnumbered Spruce collection from near Manáos, Amazonas, Brazil, probably deposited in the Berlin or Munich herbarium. It is known thus far only from the original

collection. Ruhland (1903) describes it as "Differt a forma typica vaginis pedunculisque brevissime patenti-puberulis".

PAEPALANTHUS SUCCISUS Mart. ex Körn. in Mart., Fl. Bras. 3 (1): 384. 1863.

Synonymy: Dupatya succisa (Mart.) Kuntze, Rev. Gen. Pl. 2: 746. 1891. Dupatya succisa Kuntze apud Durand & Jacks., Ind. Kew.

Suppl. 1, imp. 1, 145. 1902. Paepalanthus succisus Körn. ex Ruhl. in Engl., Pflanzenreich 13 (4-30): 172 & 292, in syn. 1903.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 384-385 & 507. 1863; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 126, 142, 172, 284, & 292. 1903; Alv. Silv., Fl. Mont. 1: 414. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16, 31, & 54. 1946; Moldenke, Alph. List Cit. 2: 412 (1948) and 3: 935. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Phytologia 4: 205. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 102, 282, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 402. 1960; Moldenke, Fifth Summ. 1: 167 & 486 (1971) and 2: 958. 1971; Moldenke, Phytologia 28: 461 (1974) and 30: 321. 1975.

This species is based on an unnumbered collection of Martius from "im Gebiet von Diamantina, an sandigen feuchten Lokalitäten", Minas Gerais, Brazil, collect in June, 1818, and deposited in the Munich herbarium where it was photographed by Macbride as his type photograph number 18730.

Paepalanthus succisus Körn. has erroneously been regarded as a synonym of P. praemorsus Ruhl. Ruhland (1903) comments about P. succisus Mart. "An species potius ad Aphorocaulonem subsectionem pertinet?" He cites only the original collection. Silveira (1928) cites Silveira 497 from the Serra do Cipó, Minas Gerais, collected in 1905.

Citations: BRAZIL: Minas Gerais: Martius s.n. [In arenosis humidis districtu adamantium, Junio 1818; Macbride photos 18730] (Mu--type, N--photo of type, W--photo of type); A. Silveira 492 [Herb. Marie-Victorin 15838] (N--photo, Z--photo).

PAEPALANTHUS SUFFRUTICANS Ruhl. in Engl., Pflanzenreich 13 (4-30): 138. 1903.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 8, 125, 138, 139, & 292. 1903; Beauverd, Bull. Herb. Boiss., ser. 2, 8: 288 & 289, fig. 10 C 18--23. 1908; Prain, Ind. Kew. Suppl. 3: 126. 1908; Alv. Silv., Fl. Mont. 1: 106 & 414. 1928; Stapf, Ind. Lond. 4: 519. 1930; Ruhl. in Engl. & Prantl, Nat. Pflanzenfam., ed. 2, 15a: 43. 1930; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Tomlinson in C. R. Metcalfe, Anat. Monocot. 3: 190. 1969; Moldenke, Fifth Summ. 1: 168 (1971)

and 2: 591 & 958. 1971; Moldenke, *Phytologia* 26: 250. 1973.

Illustrations: Beauverd, *Bull. Herb. Boiss.*, ser. 2, 8: 289, fig. 10 C 18—25. 1908.

This species is based on Glaziou 15529 from Morro da Carapuça, Minas Gerais, Brazil, flowering in June, and deposited in the Berlin herbarium where it was photographed by Macbride as his type photograph number 10653. The Glaziou collection bears printed labels inscribed "Rio de Janeiro" although it appears that the collection was actually made in Minas Gerais. Ruhland (1903) cites only the original collection, but Silveira (1928) cites A. Silveira 332 from Caraça, also in Minas Gerais, collected in 1906, and comments that "Specimina hujus speciei ab Alvaro Silveira in Morro da Carapuça, Serra do Caraça, lecta, apr. 1905, caules valde elongatos, metrales et altiorem habent. Specimina a cl. Ruhland indicata et a Glaziou in illo loco ipso collecta, caules 12 cm longitudine attingentes habent. Folia etiam in latitudine valde variabilia; in speciminibus ab Alvaro Silveira collectis ad Morro da Verruginha, Caraça, 1,5—3 mm lata; in illis ad Morro da Carapuça lectis, 5—10 mm lata." Thus far the species seems to be known only from these collections.

Citations: BRAZIL: Minas Gerais: Glaziou 15529 [Macbride photos 10653] (B—type, N—photo of type, W—photo of type, Z—istotype).

PAEPALANTHUS SUFFRUTICANS var. **ANGUSTIFOLIUS** Alv. Silv., Fl.

Mont. 1: 414 [as "angustifolia"]. 1928.

Synonymy: Paepalanthus suffruticans var. angustifolia Alv. Silv., Fl. Mont. 1: 414. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 414. 1928; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 88 & 212. 1949; Moldenke, *Résumé* 103, 328, & 490. 1959; Moldenke, *Fifth Summ.* 1: 168 (1971) and 2: 591 & 958. 1971.

This variety is based on A. Silveira 931 from Caraça, Minas Gerais, Brazil, collected in 1906 and deposited in the Silveira herbarium. Thus far it is known only from the original collection.

PAEPALANTHUS SUPERBUS Ruhl. in Engl., *Pflanzenreich* 13 (4-30): 218. 1903.

Synonymy: Paepalanthus augustus Alv. Silv., Fl. Serr. Min. 59, pl. 20. 1908. Paepalanthus augustus Alv. Silv. apud A. W. Hill, *Ind. Kew. Suppl.* 8: 169, sphalm. 1933.

Bibliography: Ruhl. in Engl., *Pflanzenreich* 13 (4-30): 12, 214, 218, & 292. 1903; Prain, *Ind. Kew. Suppl.* 3: 127. 1908; Alv. Silv., Fl. Serr. Min. 59, pl. 20. 1908; Fedde & Schust. in *Just, Bot. Jahresber.* 46 (2): 4. 1924; Alv. Silv., Fl. Mont. 1: 246, 249, 253—254, & 402, pl. 168. 1928; Ruhl. in Engl. & Prantl, *Nat. Pflanzenfam.*, ed. 2, 15a: 41 & 53. 1930; A. W. Hill, *Ind. Kew. Suppl.* 8: 169. 1933; Wangerin in *Just, Bot. Jahresber.* 57 (1): 475. 1937; Stapf, *Ind. Lond.* 4: 518. 1930; Worsdell, *Ind. Lond. Suppl.* 2: 183. 1941; Moldenke, *Known Geogr. Distrib. Erioc.* 10,

16, 45, & 55. 1946; Moldenke, *Phytologia* 2: 379. 1947; Moldenke, *Alph. List Cit.* 2: 412 (1948) and 3: 935. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 82, 88, 208, & 212. 1949; Moldenke, *Phytologia* 4: 135. 1952; Mendes Magalhães, *Anais V Reun. Anual Soc. Bot. Bras.* 234. 1956; Moldenke, *Résumé* 95, 103, 323, 485, & 490. 1959; Moldenke, *Résumé Suppl.* 1: 6, 19, & 25. 1959; Rennó, *Levant. Herb. Inst. Agron. Minas* 69. 1960; Moldenke, *Phytologia* 20: 362. 1970; Moldenke, *Fifth Summ.* 1: 168 (1971) and 2: 577, 578, & 958. 1971; Moldenke, *Phytologia* 26: 235. 1973.

Illustrations: *Alv. Silv., Fl. Serr. Min. pl.* 20. 1908; *Alv. Silv., Fl. Mont.* 1: pl. 168. 1928.

This species is based on Glaziou 19972 and 19993 from dry campos in the Serra do Cipó, Minas Gerais, Brazil, flowering in April, and deposited in the Berlin herbarium where the former was photographed by Macbride as his type photograph number 10654. Ruhland (1903) cites only the original collections. *Paepalanthus augustus* was based by Silveira on his no. 373 collected "In pratis, locis siccis atque arenosis vel humosis prope Varzea do Lageado in the Serra do Cipó", collected in April, 1905, and also deposited in the Berlin herbarium.

Recent collectors describe this plant as having white bracts and have found it growing on rocky campo near streambeds in an area of cerrado on rocky hilltops with prominent sandstone outcrops and with recently burned "campo limpo" on the lower gentler slopes with sandstone soil and with gallery forest along the streams at the base of the hills, at 1125 meters altitude. It has been collected in anthesis from February to April.

Citations: BRAZIL: Minas Gerais: Anderson, Stieber, & Kirkbride 36241 (Ld, N); G. Black s.n. [Herb. Jard. Bot. Belo Horiz. 44190] (N); A. P. Duarte 6456 [Herb. Brad. 22969] (Z); Glaziou 19972 [Macbride photos 10654] (B--cotype, Br--cotype, N--cotype, N--photo of cotype, N--photo of cotype, W--photo of cotype), 19972 (B--cotype); Mello Barreto 10746 [Herb. Jard. Bot. Belo Horiz. 31975] (N); A. Silveira 373 (B, N--photo, N--photo, Vi--15842, Z--photo); L. B. Smith 6781 (N); Smith & Ormond 6781 (Z).

PAEPALANTHUS SUPINUS Körn. in Mart., *Fl. Bras.* 3 (1): 352--353. 1863.

Synonymy: *Eriocaulon supinum* Herb. Vindob. ex Körn. in Mart., *Fl. Bras.* 3 (1): 352, in syn. 1863. *Dupatya supina* (Körn.) Kuntze, *Rev. Gen. Pl.* 2: 746. 1891. *Dupatya supina* Kuntze apud Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 1, 145. 1902. *Paepalanthus jahni* Ruhl. in Engl., *Pflanzenreich* 13 (4-30): 161--162. 1903. *Paepalanthus spunius* Körn. ex Moldenke, *Known Geogr. Distrib. Erioc.* 55, sphalm. 1946.

Bibliography: Körn. in Mart., *Fl. Bras.* 3 (1): 352--353 & 507. 1863; Kuntze, *Rev. Gen. Pl.* 2: 746. 1891; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 1, 1: 879 (1893) and imp. 1, 2: 402. 1894; Huber, *Bol. Mus. Para.* 2: 500. 1898; Malme, *Bih. Svensk. Vet. Akad. Handl.* 27 (3), no. 11: 27. 1901; Durand & Jacks., *Ind. Kew.*

Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 153, 161-163, 284, 290, & 292. 1903; Prain, Ind. Kew. Suppl. 3: 126. 1908; Malme, Phanerog. 3: 9. 1933; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 879 (1946) and imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 13, 16, 50, & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 85, 88, 210, & 212. 1949; Moldenke, Phytologia 4: 205--206. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 282, 326, 328, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 879 (1960) and imp. 3, 2: 402. 1960; Moldenke, Résumé Suppl. 3: 14. 1962; Moldenke, Fifth Summ. 1: 168 & 486 (1971) and 2: 514, 584, 591, & 958. 1971; Moldenke, Phytologia 30: 105, 317, & 320 (1975), 31: 385 & 387 (1975), and 33: 150. 1976.

This species is based on Silva Manso 78, collected in Mato Grosso, Brazil, and deposited in the Berlin herbarium where it was photographed by Macbride as his type photograph number 29995. Paepalanthus jahnii, on the other hand, is based on Malme 1660 ["V. 2"] and Schwacke 4550 & 4937 from the same state, the first-mentioned from "Serra da Chapada, bei São Jeronymo, in feuchten, jähnen Felsspalten" and the two latter from Cuyabá, also deposited in the Berlin herbarium.

Körnigke (1863) says of P. supinus: "Foliis densissimis in apice caulis et ramorum patenti-diffusis, rosulatis, hirtis insignis", while Ruhl. (1903) says of P. jahnii: "Species habitu P. bryoidi simillima quasi forma intermedia inter hanc sectionem et subsectionem Polyactidem Ruhl., cum rami jam in apice caulis ipso enascantur". The species also bears striking habitual similarity to P. cryocephalus Alv. Silv.

Recent collectors describe this plant as a delicate herb, to 10 cm. tall, small and Eleocharis-like, the flowering heads white, and have encountered it among grass in dry places and in shade of outcrops on lower mountain slopes, at altitudes of 550--700 meters, flowering in March, June, and September.

Malme (1901), whose work is sometimes erroneously cited as having been published in 1903, cites Malme 1458 & 1660b from Mato Grosso, growing "In fissuris rupis praeruptae, loco humido, umbroso" and "In fissuris subhumidissimis rupium praeruptarum".

Material has been misidentified and distributed in some herbaria as Eriocaulon microcephalum H.B.K. and Paepalanthus chiquitensis Herzog. On the other hand, the Glaziou 17836, distributed as P. jahnii, actually is P. ovatus Körn. and G. A. Black 49-8245 is P. polytrichoides f. villosus Moldenke.

Citations: BRAZIL: Mato Grosso: W. A. Anderson 9900 (Ld, N); Irwin, Souza, Grear, & Reis dos Santos 17172 (Ld, N, W--2759041); Malme 1458 (S), 1660 (N), 1660 V2 [Macbride photos 10617] (N--photo, N--photo, W--photo), 1660b (B, Er, S, S, W--1194799), 2169 (B, Ca--524517, S), 2169a (B, S, W--1483495); Schwacke 4550 (B); Silva Manso 78 [Macbride photos 29995] (N--photo of type, W--photo

of type). Pará: W. A. Egler 1245 [Herb. Mus. Goeldi 24292; Herb. Inst. Nac. Pesq. Amaz. 24392] (Z). BOLIVIA: Chiquitos: Cutler 7038 (N).

PAEPALANTHUS SYCHNOPHYLLUS Ruhl. in Engl., Pflanzenreich 13 (4-30): 197. 1903.

Bibliography: Ruhl. in Engl., Pflanzenreich 13 (4-30): 190, 197, & 292. 1903; Prain, Ind. Kew. Suppl. 3: 127. 1908; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Résumé Suppl. 1: 6. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 958. 1971.

This species is based on Glaziou 6448 from "auf Sand" at the Restinga de Tynca, Rio de Janeiro, Brazil, flowering in September, and deposited in the Berlin herbarium where it was photographed by Macbride as his type photograph number 10655. Pereira has also encountered it in a restinga, flowering in May. Ruhland (1903) cites only the original collection and comments that the "Species *P. ithyphylo* Mart. valde affinis, differt jam foliis in ramis densius dispositis, illis caulini apicis sterilis patentioribus, forma bractearum flores stipantium et sepalorum floris ♂, nec non bracteis involucrentibus multo (dimidio) minoribus et pedunculis sparsius pubescentibus. Habitus in nostra specie omnino multo robustior est."

Citations: BRAZIL: Guanabara: Pereira 3684 [Herb. Brad. 6539] (Bd); N. Santos 5134 [229-3] (Ac, Ja), 5249 [235-1] (Ja, Ja, Ja). Rio de Janeiro: Glaziou 6448 [Macbride photos 10655] (B--type, N--isotype, N--photo of type, N--photo of type, S--isotype, W--photo of type).

PAEPALANTHUS SYNGONANTHOIDES Alv. Silv., Fl. Serr. Min. 67, pl. 13. 1908.

Synonymy: Paepalanthus syngonan-thoides Alv. Silv., Fl. Mont. 1: pl. 17 II, sphalm. 1928.

Bibliography: Alv. Silv., Fl. Serr. Min. 67, pl. 13. 1908; Fedde & Schust. in Just, Bot. Jahresber. 46 (2): 5. 1924; Alv. Silv., Fl. Mont. 1: 273--274 & 414, pl. 17 II. 1928; Stapf, Ind. Lond. 4: 519. 1930; A. W. Hill, Ind. Kew. Suppl. 8: 169. 1933; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Worsdell, Ind. Lond. Suppl. 2: 184. 1941; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Phytologia 2: 381. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Phytologia 4: 206. 1953; Moldenke, Résumé 103, 328, & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 591 & 958. 1971.

Illustrations: Alv. Silv., Fl. Serr. Min. pl. 13. 1908; Alv. Silv., Fl. Mont. 1: pl. 17 II. 1928.

This species is based on A. Silveira 447 from "In campis uliginosis arenosisque in Serra do Batatal prope Capanema", Minas Gerais, Brazil, collected in April, 1906, and is deposited in the Silveira herbarium. Silveira (1908) comments that the species "A

P. saxicola Koern., speciei unica in subgenere Psilandra Kuhl. adhuc collocata, foliis multo longioribus et vaginis oblique fissis praecipue differt".

Additional citations: BRAZIL: Minas Gerais: Macedo 1637 (S); A. Silveira 447 (B--isotype, Z--isotype).

PAEPALANTHUS TATEI Moldenke in Gleason & Killip, Brittonia 3: 158--159. 1939.

Synonymy: Paepalanthus maguirei Moldenke in Maguire & al., Bull. Torrey Bot. Club 75: 198. 1949. Paepalanthus tafelbergensis Moldenke in Maguire & al., Bull. Torrey Bot. Club 75: 199. 1948.

Bibliography: Moldenke in Gleason & Killip, Brittonia 3: 158--159. 1939; Moldenke, Known Geogr. Distrib. Erioc. 6 & 55. 1946; Hill & Salisb., Ind. Kew. Suppl. 10: 158. 1947; Moldenke, Phytologia 2: 373 & 380. 1947; Moldenke in Maguire & al., Bull. Torrey Bot. Club 75: 198--199. 1948; Moldenke, Alph. List Cit. 2: 352 & 549 (1948), 3: 701 & 974 (1949), and 4: 985. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 64, 67, 210, & 212. 1949; Moldenke, Brittonia 7: 78. 1950; Moldenke, Mutisia 6: 3. 1952; Moldenke, Phytologia 4: 149 (1952) and 4: 206. 1953; Moldenke, Mem. N. Y. Bot. Gard. 8: 98. 1953; E. J. Salisb., Ind. Kew. Suppl. 11: 175. 1953; Uribe, Mutisia 25: 28. 1956; Moldenke, Résumé 68, 72, 75, 77, 326, 328, & 490. 1959; Lindeman & Görts-van Rijn in Lanjouw, Fl. Surin. 1 [Meded. Konink. Inst. Trop. 30, Afd. Trop. Prod. 11]: 331 & 333--334. 1968; Moldenke, Phytologia 20: 297. 1970; Moldenke, Fifth Summ. 1: 126, 130, & 132 (1971) and 2: 585 & 959. 1971; Moldenke, Phytologia 30: 47 (1975) and 33: 149. 1976.

Collectors describe this plant as having stems elongated, leaves flaccid and grass-green or firmly membranaceous, squarrose, rich-green above, paler beneath, involucre black, inflorescence-heads "black below, white above", and flowers white. Ruiz-Terán & López-Palacios describe it as a "Hierba aislada o cespitosa, caulescente, psamófila y heliófila, erecta, 20--30 cm. de alto, incluyendo inflorescencias, porción foliada de 6 cm. de largo. Hojas deltado-lineares, sólo las distales cloroflicas, verde intensas, las restantes marcescentes, parduscas. Escapos de 15--30 cm. de largo. Capítulos subglobosos a hemisféricos, 5--6 mm. de diámetro. Flores blancas o blanquecino grisáceas."

It has been found growing along moist stretches of sandy alluvium, on rocks by, under, or at the top of waterfalls, on river banks and moist ledges, among rocks in open streambeds, and on south-facing forested slopes and southwest-facing sandstone bluffs, at altitudes of 500--2090 meters, flowering from November to March, May, and July to September, fruiting in December. Ruiz-Terán & López-Palacios encountered it on "orillas de la carretera" and in "bosque". Steyermark & Wurdack describe it as "locally frequent". Maguire and his associates report it as "common among rocks", "locally frequent in wet rocky bed of streams", "common in wet pockets of granite boulders", "locally common on savannas", "frequent in bogs about pools", "frequent on moist sandy banks among rocks", "frequent in wet places along banks among rocks and boulders",

"common in wet places along streams", "frequent in Sphagnum borders of seeps on bedrock of savanna", "frequent on moist rocks", and "frequent in cracks in rocks of streambeds".

The leaves on Cardona Puig 2969 are smaller than is usual in this species; Steiermark 75998 has viviparous or proliferous heads and Steiermark says of his no. 75491 "this appears to be a luxuriant larger phase of a smaller type encountered".

The species is known from the Cerro Sipapo, Cerro Duida, Cerro Guanay, and Cerro Yaví in the Guyana highlands, on Auyán-tepuí in Bolívar and in Lara, Venezuela, and the Sierra de la Macarena in Colombia. It is based on G. H. H. Tate 1326 from Auyán-tepuí, Bolívar, Venezuela. Paepalanthus maguirei is based on Maguire 24670 from cracks in rock of streambed, North Ridge Cascade, mixed high forest, Savanna I, 1500--1700 feet altitude, Tafelberg, Surinam, collected on September 8, 1944, and deposited in the Britton Herbarium at the New York Botanical Garden. Paepalanthus tafelbergensis is based on Maguire 24485 from the Sphagnum border of seeps, bedrock, Savanna VIII, Tafelberg, Surinam, collected on August 25, 1944, and deposited in the same herbarium. The former differs in having its leaves and peduncles more glabrous and in some differences in details of the inflorescence; the latter has its floral parts apparently a bit larger, stiffer, and more conspicuously barbate. Recent workers on the Surinam flora feel that P. tafelbergensis may, indeed, be a distinct species, but admit that P. maguirei and P. tatei are conspecific. Lindeman & Górts-van Rijn (1968) cite for P. tatei from Surinam: Maguire 24241, 24485, & 24670 and Tate 1326.

Paepalanthus tatei is obviously very closely related to P. cardonae Moldenke, P. leucocyaneus Tutin, and P. salticola Herzog. The C. B. Maguire 33045 and Steiermark & Wurdack 1080, distributed as P. tatei, are actually P. scopulorum Moldenke.

Additional citations: COLOMBIA: Meta: Philipson 2394 (Bm, Em, Er, N). VENEZUELA: Amazonas: Maguire, Cowan, & Wurdack 30364 (E, Gl, N, Ve, W); Maguire & Maguire 35020 (N), 35021 (N), 35208 (N), 35436 (N); Maguire, Phelps, Hitchcock, & Budowski 31643 (N, W), 31718 (F, Gl, K, N, Ve, W); Maguire & Politi 27343 (Bm, Bo, E, F, Gl, Ja, K, N, Ut, Ve, W), 27702 (Bm, F, Ja, N, Ve, W); Phelps & Hitchcock 24 (N). Bolívar: Cardona Puig 2702 (N), 2969 (W--2436079); Koyama & Agostini 7532 (N, N); Pannier & Schwabe s.n. [Auyantepuí] (Ve, Ve); Ruiz-Terán & López-Palacios 11290 (Mi), 11451 (Mi); J. A. Steiermark 75491 (Ss), 75504 (Ss), 75998 (Z), 90337 (Ca), 93450 (Lw, N, N, S), 93724 (Lw, N); Steiermark & Nilsson 723 (Mi, N); Steiermark & Wurdack 1080 (N, N), 1123 (N); Ule 8804 [Herb. Mus. Goeldi 13834] (Bs, N); Vareschi & Foldats 4511 (N, Ve--40467), 4788 (N, Ve--40482). Bolívar: Bogner 976 (Mu); J. A. Steiermark 111262 (Ld). GUYANA: Maguire & Fanshawe 32538 (Mu, N). SURINAM: C. B. Maguire 24241 (N), 24485 (N), 24670 (N), 24832 (N); Maguire, Schulz, Soderstrom, & Holmgren

54203 (N).

PAEPALANTHUS TENUICAULIS Alv. Silv., Fl. Mont. 1: 113—115, pl. 66, fig. 2. 1928.

Bibliography: Alv. Silv., Fl. Mont. 1: 113—115 & 114, pl. 66, fig. 2. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 200. 1938; Worsdell, Ind. Lond. Suppl. 2: 184. 1941; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Phytologia 2: 381. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103, 328, & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 591 & 959. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 66, fig. 2. 1928.

This species is based on A. Silveira 568, collected "In campis ad Pedra Pintada, prope Cocaes, Minas Gerais, praecipue in umbrosis sub rupibus" in January, 1910, and is deposited in the Silveira herbarium. Silveira (1928) says that the "Species ab omnibus illis sectionis Leptocephali bene distincta". Thus far it is known only from the original collection.

PAEPALANTHUS TESSMANNII Moldenke, Phytologia 3: 169—170. 1949.

Synonymy: Paepalanthus tessmannii Moldenke ex Angely, Fl. Paran. 10: 12. 1957. Eriocaulon tessmannii Moldenke, Résumé 293, in syn. 1959.

Bibliography: Moldenke, Phytologia 3: 169—170 (1949) and 4: 206. 1953; E. J. Salisb., Ind. Kew. Suppl. 11: 176. 1953; Angely, Fl. Paran. 10: 6, 12, & 15 (1957) and 12: 9. 1958; Moldenke, Résumé 103, 293, 428, & 490. 1959; Moldenke, Résumé Suppl. 1: 22. 1959; Angely, Fl. Paran. 16: 66 (1960) and 17: 24. 1961; Moldenke, Résumé Suppl. 6: 10 (1963) and 12: 4. 1965; Angely, Fl. Anal. Paran., ed. 1, 201. 1965; Moldenke, Phytologia 18: 55 (1968) and 19: 103. 1969; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 514, 591, & 959. 1971.

The type of this species was collected by Günther Tessmann (no. 3781) in wet places between grass on the campo at Piraquara, about 22 km. east of Curitiba, Paraná, Brazil, on January 15, 1949, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species has been found in flower in January and October.

Material has been misidentified and distributed in some herbaria as Eriocaulon dictyophyllum Körn. On the other hand, the Hatschbach 1197 & 2057, Reitz 5281, and Tessmann 3649, distributed as P. tessmannii, are actually Eriocaulon sellowianum var. paranense (Moldenke) Moldenke & Smith.

Additional citations: BRAZIL: Paraná: Dombrowski 1727 [Kuniyoshi 1407] (Ld), 2040 [Kuniyoshi 1766] (Ac); Dombrowski & Saito 595/386 (Ac), 1033/850 (Ac); Hatschbach 3147 (Z), 32730 (Ld); Hatschbach & Moreira 6810 (Mi); Mattos 4330 (N); E. A. Moreira 147 (Ac, W--2369343); Reitz & Klein 17457 (Ac, N). Santa Catarina: Smith & Klein 13988 (Ac, N).

PAEPALANTHUS TORTILIS (Bong.) Mart., *Flora 24*, Beibl. 2: 58 & 60. 1841.

Additional synonymy: Eriocaulon tortile Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 1: 624. 1831 [not E. tortile Steud., 1855]. Eriocaulon nigro-niveum A. St.-Hil., *Voy. Dist. Diam.* 1: 392--393. 1833. Eriocaulon nigro-niveum var. ♀ A. St.-Hil., *Voy. Dist. Diam.* 1: 392. 1833. Eriocaulon nigro-niveum var. ♀ A. St.-Hil., *Voy. Distr. Diam.* 1: 392. 1833. Eriocaulon polyphyllum Salzm. ex A. St.-Hil., *Voy. Dist. Diam.* 1: 383, in syn. 1833. Eriocaulon nigro-niveum var. ♂ A. St.-Hil. ex Kunth, *Enum. Pl.* 3: 503, in syn. 1841. Eriocaulon tortile var. glabra, subsimplax Mart., *Flora 24*, Beibl. 2: 60, in syn. 1841. Eriocaulon yuccae-folium Mertens ex Mart., *Flora 24*, Beibl. 2: 60. 1841. Paepalanthus nigro-niveus Kunth, *Enum. Pl.* 3: 502--503. 1841. Paepalanthus nigro-niveus f. intermedia Kunth, *Enum. Pl.* 3: 503. 1841. Paepalanthus nigro-niveus f. major Kunth, *Enum. Pl.* 3: 503. 1841. Paepalanthus nigro-niveus f. minor Kunth, *Enum. Pl.* 3: 503, in syn. 1841. Eriocaulon atrocephalum Steud., *Syn. Pl. Glum.* 2: [Cyp.] 276. 1855. Eriocaulon nigroniveum A. St.-Hil. apud Steud., *Syn. Pl. Glum.* 2: [Cyp.] 275 & 334. 1855. Paepalanthus nigroniveus Kunth apud Körn. in Mart., *Fl. Bras.* 3 (1): 354 & 505. 1863. Eriocaulon tortilis Mart. ex Wawra, *Bot. Ergebn. Reise Bras. pl.* 89. 1866. Dupatya tortilis (Bong.) Kuntze, *Rev. Gen. Pl.* 2: 746. 1891. Dupatya tortilis Kuntze apud Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 1, 145. 1902. Eriocaulon nigro-niveum var. major A. St.-Hil. ex Moldenke, *Known Geogr. Distrib. Erioc.* 38, in syn. 1946. Eriocaulon nigro-niveum var. minor A. St.-Hil. ex Moldenke, *Known Geogr. Distrib. Erioc.* 38, in syn. 1946. Paepalanthus tertilis Mart. ex Mendes Magalhães, *Anais V Reun. Anual Soc. Bot. Bras.* 236, sphalm. 1956. Eriocaulon microcephalum Sellow ex Moldenke, *Résumé Suppl.* 1: 17, in syn. 1959 [not E. microcephalum Cham. & Schlecht., 1831, nor Hook. & Arn., 1854, nor H.B.K., 1816]. Paepalanthus nigrovirens Kunth ex Moldenke, *Résumé Suppl.* 1: 21, in syn. 1959. Eriocaulon pulchellum Zeyh. ex Moldenke, *Résumé Suppl.* 1: 18, in syn. 1959. Eriocaulon tortile var. glabra Mart. ex Moldenke, *Résumé Suppl.* 1: 18, in syn. 1959. Eriocaulon tortile f. normalis Mart. ex Moldenke, *Résumé Suppl.* 1: 18, in syn. 1959. Paepalanthus tortilis Körn. ex C. R. Metcalfe, *Anat. Monocot.* 3: 189. 1969. Eriocaulon tortile var. laxa Mart. ex Moldenke, *Phytologia* 31: 397--398, in syn. 1975. Eriocaulon tortilis Bong. ex Moldenke, *Phytologia* 31: 398, in syn. 1975. Eriocaulon yuccae-folium Mart. ex Moldenke, *Phytologia* 31: 398, in syn. 1975. Paepalanthus hygrophilus Mart. ex Moldenke, *Phytologia* 31: 404, in syn. 1975. Paepalanthus intermedius Mart. ex Moldenke, *Phytologia* 31: 404, in syn. 1975 [not P. intermedius Körn., 1863]. Paepalanthus nigro-niveus f. latifolia Spruce ex

Moldenke, *Phytologia* 31: 404, in syn. 1975.

Bibliography: Bong., *Mém. Acad. Imp. Sci. St. Pétersb.*, ser. 6, 1: 624. 1831; Bong., *Ess. Monog. Erioc.* 8 & 24. 1831; A. St.-Hil., *Voy. Dist. Diam.* 1: 392--393. 1833; Steud., *Nom. Bot.*, ed. 2, 1: 586. 1840; Kunth, *Enum. Pl.* 3: 502--503, 524, 572, 573, 613, 614, & 625. 1841; Mart., *Flora* 24: Beibl. 2: 58 & 60. 1841; A. St.-Hil., *Linnaea* 16: Lit. 187--188. 1842; D. Dietr., *Syn. Pl.* 5: 259 & 266. 1852; Steud., *Syn. Pl. Glum.* 2: [Cyp.] 275--277, 333, & 334. 1855; Körn. in Mart., *Fl. Bras.* 3 (1): 314, 354, 505, & 507. 1863; Wawra, *Bot. Ergebn. Reise Bras.* pl. 89. 1866; Körn. in Warm., *Vidensk. Meddel. Nat. Foren. Kjöbenh.* 1871: 311. 1871; Kuntze, *Rev. Gen. Pl.* 2: 746. 1891; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 1, 1: 877, 879, & 880 (1893) and imp. 1, 2: 402. 1894; Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 1, 145. 1902; Ruhl. in Engl., *Pflanzenreich* 13 (4-30): 153, 155, 160, 223, 284, 286--288, 291, & 292. 1903; Alv. Silv., *Fl. Mont.* 1: 120 & 414. 1928; Stapf, *Ind. Lond.* 4: 519. 1930; Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 2, 1: 877, 879, & 880 (1946) and imp. 2, 2: 402. 1946; Moldenke, *Alph. List Cit.* 1: 43 & 222. 1946; Moldenke, *Known Geogr. Distrib. Erioc.* 5, 6, 16, 31, 32, 37, 38, 41, 42, 51, & 55. 1946; Moldenke, *Phytologia* 2: 381. 1947; Moldenke, *Alph. List Cit.* 3: 710, 731, 814, 815, & 891 (1949) and 4: 984. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 61, 64, 88, & 212. 1949; Moldenke, *Phytologia* 4: 206. 1953; Mendes Magalhães, *Anais V Reun. Anual Soc. Bot. Bras.* 236--237. 1956; Durand & Jacks., *Ind. Kew. Suppl.* 1, imp. 3, 145. 1959; Moldenke, *Résumé* 68, 72, 103, 282, 286, 290, 291, 293, 294, 326, 328, & 490. 1959; Moldenke, *Résumé Suppl.* 1: 17, 18, & 21. 1959; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 3, 1: 877, 879, & 880 (1906) and imp. 3, 2: 402. 1960; Moldenke, *Résumé Suppl.* 2: 5. 1960; Rennó, *Levant. Herb. Inst. Agron. Minas* 71. 1960; Moldenke, *Résumé Suppl.* 11: 5. 1964; Moldenke, *Phytologia* 18: 303 & 305 (1969) and 19: 95. 1969; Tomlinson in C. R. Metcalfe, *Anat. Monocot.* 3: 149, 159, 160, 167, 174, & 189. 1969; Moldenke, *Phytologia* 20: 14 & 113. 1970; Moldenke, *Fifth Summ.* 1: 119, 126, 168, & 486 (1971) and 2: 494, 506, 507, 509, 514--516, 518, 537, 591, 788, & 959. 1971; Moldenke, *Phytologia* 25: 164, 165, & 239 (1973), 29: 319 & 328 (1974), 30: 37, 92, 93, 100, & 118 (1975), 31: 397, 398, 404, & 405 (1975), 33: 52 & 374 (1976), and 34: 259. 1976.

Illustrations: Wawra, *Bot. Ergebn. Reise Bras.* pl. 89. 1866.

The type of this species was collected by Ludwig Riedel "In arenosis humidis prope Ilheos", Bahia, Brazil, and is doubtless deposited in the Leningrad herbarium. An isotype was photographed by Macbride in Munich as his type photograph number 18731. Bongard's original (1831) description is "Caule brevi, subramoso, folioso; foliis caulinis lineari-lanceolatis, pilosis; pedunculis fasciculatis, elongatis, gracilibus, spiraliter tortis, glabris; vaginis pilosis".

Saint-Hilaire (1833) also based his Eriocaulon nigro-niveum on a collection from the same Brazilian state, collected by himself

[probably Saint-Hilaire I.392]. Kunth (1841) describes Paepalanthus nigro-niveus f. major as "pedunculis 4--9-pollicaribus; capitulis magnitudine grani piperis nigri; vaginis glabris"; f. intermedia as "pedunculis 2--3 1/2 -pollicaribus; capitulis vix magnitudine grani cannabis; vaginis glabris"; and f. minor [probably based on Saint-Hilaire I.393] as "pedunculis 1 1/2 -- 1 4/3 [sic!] - pollicaribus; capitulis magnitudine grani sinapis; vaginis pilosis". He seems to cite unnumbered Saint-Hilaire collections as typifying each of these forms. He comments that P. nigro-niveus "Praecedenti [P. paludosus Kunth] affinis, nisi eadem species". On page 524 of the same work he affirms that it is also related to what is now known as Leiostrix graminea (Bong.) Ruhl., but in this case the likeness is certainly only superficial. Jackson (1893) regards Eriocaulon perpusillum Steud. as specific with P. tortilis, but I regard it as a separate, although certainly closely related, species, P. perpusillum Kunth.

It should be noted here that the Eriocaulon tortile credited to Steudel in the above synonymy is a synonym of P. flaccidus (Bong.) Kunth; P. intermedius Körn. and Eriocaulon pulchellum Körn. are valid species in their respective genera; and Eriocaulon microcephalum Cham. & Schlecht. is E. schiedeanum Körn., E. microcephalum Hook. & Arn. is E. benthami Kunth, and E. microcephalum H.B.K. is a valid species. Paepalanthus tortilis var. albidus Ruhl. is a synonym of P. caldensis Malme, a somewhat similar appearing species with glabrous foliage.

It should also be noted here that Eriocaulon yuccaefolium Mertens and E. tortile var. glabra Mart. are both apparently based on Martius 560, the former in the Brussels herbarium and the latter at Berlin; E. nigrovirens and E. tortile var. laxa are both based on Martius 551, the former in the Berlin herbarium and the latter at Brussels; E. tortile var. normalis is based on Martius 556 at Berlin, E. microcephalum Sellow on Sellow 1150 at Berlin, E. pulchellum Zeyh. on Herb. Zeyher s.n. at Berlin, E. polyphyllum Salz. on Salzmann s.n. [Bahia, in humidis] at Berlin, Paepalanthus hygrophilus on Pohl s.n. [1839] at Brussels, P. nigro-niveus f. latifolia on Spruce 2602 at Brussels, and P. intermedius Mart. on Houllet s.n. [Brasil 1843] at Brussels.

Saint-Hilaire's original (1833) description of Eriocaulon nigro-niveum is: "acaule v. caulescens: fol. linearibus, acutis, mollibus glabris aut interdum pilosis, ima basi lanatis, recurvis, superioribus erectis congestis; pedunculis subfasciculatis glabris, per siccationem spiraliter tortis, capitulis basi umbilicatis, squamis nigris exterioribus calycibus niveo-barbatis. Beschreibung. - var. ρ minor, caule nullo aut subnullo; fol. angustioribus interdum vaginisque pilosiusculis; pedunculis brevioribus; capitulis minoribus. - var. γ major, caule circ. bipollicari; fol. latioribus superioribus vaginisque pilosis; pedunculis longi-

oribus, manifeste fasciculatis, capitulis crassioribus. Ces 3 variétés se nuancent entre elles. La dernière a été recueillie sur les bords de la mer à Bahia, par M. Salzmann, qui provisoirement l'avait appelé dans ses herbiers E. polyphyllum. L'E. nigro-niveum a de grands rapports avec E. pellucidum Mich. "Actually there is no close similarity whatever in the general appearance of these two taxa."

Recent collectors have found P. tortilis growing in dried-up swamps, restingas, moist sandy soil, and moist open sandy ground near the edge of cerrado, on beaches and on lakesides with Sohagnum, and in seepage between crags, at 350--2600 meters altitude, flowering from January to July and in September. Mendes Magalhães (1956) asserts that it flowers from April to November. It has been described by collectors as a slender herb, with bright-green rosettes of leaves, growing in colonies, with "grayish" or white flower-heads. Harley and his associates found it in an area of riverside damp sandy soil, sandstone rocks, and partly burned-over vegetation.

Bongard (1831) cites a plate "49" as illustrating this species, but the plate does not seem to have been published and probably exists only in the Leningrad library or herbarium. The photograph of Ule 368, cited below, is of a specimen deposited in the Hamburg herbarium.

Körnigke (1863) cites the following collections: VENEZUELA: Trujillo: Funck & Schlim 808, Linden 1436. BRAZIL: Amazonas: Spruce 2602. Bahia: Blanchet 1965 & 2438, G. Gardner 907, Lhotzky s.n., Luschnath 35 & s.n., Martius s.n., L. Riedel s.n., Salzmann s.n., Sellow s.n. Minas Gerais: L. Riedel s.n. Pernambuco: Forssell s.n. Rio de Janeiro: Gomez s.n., Lund s.n., Likan s.n., L. Riedel 558 & s.n., Weddell s.n., Wied-Neuwied s.n.

Ruhl (1903) cites no specimens, merely asserting that the species occurs in "Venezuela, Colombia und Brasilien: Provinzen Amazonas, Pernambuco, Bahia, Rio de Janeiro und Minas Geraes". He comments that the "capitulis facillime dignoscenda". Silveira (1928) cites J. Michaeli 802 from Minas Gerais. Körnigke (1871) cites Glaziou 1254 and Lund s.n. from Rio de Janeiro "in campis arenosis paludosis; Julio fl." Blanchet 2438 is a mixture with some unrecognized leaves; Nexia 5756 is a mixture with Syngonanthus gracilis (Bong.) Ruhl.; and Coelho de Moraes 2212 is a mixture with Syngonanthus gracilis var. glabriusculus Ruhl.

Paepalanthus tortilis is certainly closely related to P. obtusifolius (Steud.) Körn., which may be distinguished by its generally broader and more obtuse leaves, and to P. viridis Körn. Material has also been misidentified and distributed in some herbaria as P. fasciculatus (Rottb.) Kunth and Syngonanthus gracilis (Bong.) Ruhl. On the other hand, the Pickel 2772, distributed as P. tortilis, is actually P. lamarkii Kunth, Spruce 931 is P. myocephalus var. minor Körn., and Blanchet 3584 is P. obtusifolius (Steud.)

Körn.

Additional citations: VENEZUELA: Trujillo: Funck & Schlim 808 (B, Br); Linden 1436 (Br). BRAZIL: Amazonas: Spruce 2602 (Br). Bahia: Pelém 1680 (Ac), 1743 (Ac); Blanchet 1463 (Mi), 1648 (P), 2438, in part (C); M. A. Chase 8010 (W--1282173); G. Gardner 907 (N); Glocker 236 (S); Harley, Renvoize, Erskine, Brighton, & Pinheiro in Harley 15957 (Ld); Lhotsky s.n. [Bahia] (B); Luschnath 23 (B), 31 (B, Br), 35 [Martius 560] (N, Br, Br, Mu), s.n. [prope Procó, Julio 1834] (B, Br); Lützelburg 471 (Mu); Martius 551 (B, B, Br, E, Mu, S, Z), 556 (B, Br, Mu), s.n. [prope Almada et Ferradas in distr. Ilheos, prov. Soteropolit. Dec. 1818] (Mu); Salzmann s.n. [Bahia, in humidis] (Br, N); Sellow 1150 (B), s.n. [Bahia] (B). Distrito Federal: Beyrich s.n. [Sept. 1822] (B); Glaziou 1254 (N, P); E. Pereira 3853 (Bd--6485, Z). Guanabara: Alston & Lutz 133 (Ja--114118); Salganha & al. 5972 (Ja--47851, Ja); N. Santos 5330 [244-1] (Ac, Ja), 5406 (Ja); Santos, Machado, & Martins Exc. 261, Col. 2 [N. Santos 5961] (Ac); Schwacke s.n. [Copacabana 1887] (Ja--47946). Mato Grosso: Argent in Richards 6472 (Ld, N). Minas Gerais: Mexia 5756, in part [Herb. Leonard 7656] (B, Ba, Er, Go, Mi, Mv, N, S, Ut--50242A, W--1571902). Paraíba: Coelho de Moraes 2212, in part (Lm); Tavares 1031 (W--2407869), 1067 (W--2407870). Pernambuco: Forssell 76 (S, S); Pickel 141 (B), 3164 (B, Mi, N, S), s.n. [Jan. 1931] (Ba, W--1523228); Tavares 827 (W--2403784). Rio de Janeiro: Collector undetermined s.n. [8/4/1875] (Ja--47860); Forssell s.n. (S); G. Gardner 348 (W--1066425), 848 (S, W--936287); Gaudichaud 309 (B); Glaziou 5352 (S), 5452 (W--1112474); Gomes s.n. [Rio Janeiro] (Mu); Martius s.n. [Maná] (Ja--47948); Mikan s.n. (Br); Netto, Glaziou, & Schwacke s.n. [Cabo Frio, Sept. 1881] (Ja--47859); L. Riedel 5 [Macbride photos 18731] (B--isotype, Mu--48-isotype, N--photo of isotype, S--isotype, Ut--381--isotype, W--photo of isotype), 558 (B); A. Saint-Hilaire I.392 (B), I.393 (B); Schwacke s.n. [Maná, 16/1/1887] (Ja--47947); Segadas-Vianna 4151 (Sm), 4281 (Ja), 5032 [Erade 20366] (Ja); Segadas-Vianna, Dau, Ormond, Machline, & Lorêdo 135 (Sm), 139 (Ja), 148 (Ja), 160 (Ja), 161 (Sm), 346 (Ja), 580 (Sm), 936 (Ja); L. B. Smith 6590 (Z); Ule 29 (Ja--47949, Ja), 868 (Hg, N--photo, Z--photo); Weddell 548 [41] (Br); Wied-Neuwied s.n. [ad Campos et alibi Bras. orient. 1829] (Br). State undetermined: Beyrich s.n. [Brazil] (Mi); P. Clausen 177 [P.56] (N, Qu); Herb. Zeyher s.n. (B); Houllet s.n. [Brasil 1842] (Br); J. E. Pohl s.n. [1839] (Br), s.n. [In Brasilia] (Mu). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (B).

PAEPALANTHUS TORTILIS var. MINOR Moldenke, Phytologia 33: 374. 1976.

Bibliography: Moldenke, Phytologia 33: 374 (1974) and 34: 259.

1976.

Citations: BRAZIL: Espirito Santo: Araujo 376 [A. L. Peixoto 246; Herb. Jard. Bot. Rio Jan. 16492] (Z--type).

PAEPALANTHUS TRIANGULARIS (L.) Körn. in Mart., Fl. Bras. 3 (1): 470. 1863.

Synonymy: Plantaginella aurea alopecuroides brasiliana, foliis gramineis Breyn., Exot. Min. Cog. Pl. Cent. 1: 108. 1678.

Plantaginella aurea alopecuroides brasiliana fol. gramineis, Breijnei Moris., Pl. Hist. Univ. 3: sect. 8, pl. 16, fig. 17. 1699.

Eriocaulon triangulare L., Sp. Pl., ed. 2, 128. 1762.

Eriocavlon plantaginella Crantz, Inst. Rei Herb. 1: 360. 1766.

Eriocavlon triangulare L. apud. Reich. in L., Syst. Pl. 1: 243.

1779. Paepalanthus triangularis Körn. in Mart., Fl. Bras. 3 (1):

470. 1863. Dupatya triangularis (L.) Kuntze, Rev. Gen. Pl. 2:

746. 1891. Eriocaulon plantaginella Crantz apud Jacks. in Hook.

f. & Jacks., Ind. Kew., imp. 1, 1: 879, in syn. 1893. Dupatya triangularis Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902.

Bibliography: Breyn., Exot. Min. Cog. Pl. Cent. 1: 108--109, pl. 50. 1678; Moris., Pl. Hist. Univ. 3: 259--260, sect. 8, pl. 16, fig. 17. 1699; L., Sp. Pl., ed. 2, 128. 1762; Crantz, Inst. Rei Herb. 1: 360. 1766; J. A. Murr. in L., Syst. Veg., ed. 12, 109. 1774; Reich. in L., Syst. Pl. 1: 243. 1779; J. A. Murr. in L., Syst. Veg., ed. 13, 1: 108 (1783) and ed. 14, 127. 1784; Palau y Verdera, Part. Práct. Bot. 1: 531. 1784; Jacq., Ind. Pl. 63. 1785; Lippert, Pflanzensyst. 1: 187. 1786; J. F. Gmel. in L., Syst. Nat., ed. 13, 2: 206. 1791; Lam., Tabl. Encycl. Méth. [Illustr. Pl.] 1: 214. 1791; Henckel, Nom. Bot. 68. 1797; Pers. in L., Syst. Veg., ed. 15, 132. 1797; Raeusch., Nom. Bot. 30. 1797; Willd. in L., Sp. Pl., ed. 4, 1: 485. 1797; Jolyclerc, Syst. Sex. Vég., ed. 1, imp. 1, 92. 1798; J. A. Murr. in L., Syst. Veg., ed. 15 nov., 106. 1798; Jolyclerc, Syst. Sex. Vég., ed. 1, imp. 2, 92. 1803; Mouton-Fontenille in L., Syst. Pl. 1: 147. 1804; Pers., Syn. Pl. 1: 110. 1805; Jolyclerc, Syst. Sex. Vég., ed. 2, 1: 101. 1810; Pers., Sp. Pl. 1: 283. 1817; Roem. & Schult. in L., Syst. Veg., ed. 15 nov. 2: 361--362. 1817; Steud., Nom. Bot. Phan., ed. 1, 313. 1821; Spreng. in L., Syst. Veg., ed. 16, 3: 775. 1826; Roem. & Schult., Mant. 3: 671. 1827; Bong., Ess. Monog. Erioc. 3, 6, & 8. 1831; Steud., Nom. Bot., ed. 2, 1: 585 & 586. 1840; Kunth, Enum. Pl. 3: 548, 572, & 614. 1841; D. Dietr., Syn. Pl. 5: 266. 1852; Steud., Syn. Pl. Glum. 2: [Cyp.] 283 & 334. 1855; Körn. in Mart., Fl. Bras. 3 (1): 470 & 508. 1863; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 879 (1893) and imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 279, 287, & 292. 1903; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 879 (1945) and imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16, 31, 38, & 55. 1946; Moldenke, Known Geogr. Distrib.

Verbenac., [ed. 2], 88, 206, 212, & 214. 1949; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 282, 291, 293, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 879 (1960) and imp. 3, 2: 402. 1960; Moldenke, Résumé Suppl. 18: 12. 1969; Moldenke, Phytologia 18: 305--306, 429, & 433 (1969) and 20: 14 & 18. 1970; Moldenke, Fifth Summ. 1: 168 & 486 (1971) and 2: 515, 517, 518, & 959. 1971; Moldenke, Phytologia 31: 406. 1975.

Illustrations: Breyn., Exot. Min. Cog. Pl. Cent. 1: pl. 50. 1678; Moris., Pl. Hist. Univ. 3: sect. 8, pl. 16, fig. 17. 1699.

The original description of this plant by Breyne (1678) reads as follows: "Plantaginella aurea alopecuroides Brasiliana, foliis graminis. En ex minimis unam, sed rarissimis charissimisq[ue] [sic]; nostris plantulis. Radix ejus exigua, mille fibris niveis comata, Foliola multa graminea & angusta Graminis Luzulae minoris Johanni Bauhino, sed omnino glabra, in orbem diffundens: ex quorum gremio, coliculi quinquaginta vel plures prosiliunt, tenuissimi, plantae exilitatem Globulis oblongiusculis lanuginosisque, Plantaginis angustifoliae paniculis Lagopi minoribus uberrime compensates, singuli, singulis coliculis triuncialibus vel brevioribus insidentes, compositi ex pilis lenissimis leucophaei coloris, inter quos flosculi flavi perminuti, summâ amoenitate, veluti punctula aurea, emicant, quod jucundissimum huic plantulae in Brasiliâ vigenti, aspectum conciliat."

Morison (1699) repeats this description almost verbatim: "Plantaginella aurea alopecuroides Brasiliana foliis graminis, Breyn. Cent. 1. Radix ei exigua, mille fibris niveis comata, foliola multa, graminea & angusta, Graminis Luzulae minoris, J. B. sed omnino glabra, in orbem diffundens. Ex horum autem gremio coliculi quinquaginta vel plures prosiliunt, tenuissimi, plantae exilitatem globulis oblongiusculis lanuginosisque Plantaginis angustifoliae paniculis Lagopi minoribus uberrime compensates, singuli singulis coliculis triuncialibus vel brevioribus insidentes, compositi ex pilis lenissimis, leucophaei coloris, inter quos flosculi flavi, perminuti, summa amoenitate, veluti punctula aurea, emicant. Atque hi jucundissimum huic plantulae in Brasilia vigenti aspectum conciliant."

A glance at the illustrations given by Breyne and repeated by Morison shows without any doubt that this taxon has nothing whatever to do with Eriocaulon microcephalum H.B.K., although what evidence there is for removing it from the genus Eriocaulon, where Linnaeus placed it, and shifting it to Paepalanthus, as Kornecke has done, I cannot see. The illustration appears to be a good one and the plant ought to be recognizable among the Brazilian members of the Eriocaulaceae.

Sprengel (1826) regarded Eriocaulon microcephalum H.B.K. as a synonym of E. triangulare L., but since Linnaeus based his name on the plant illustrated by Breyne, such a disposition of the Humboldt, Bonpland, and Kunth name seems quite out of the question. Linnaeus (1762) originally described his E. triangulare as follows: "ERIOCAULON culmos triangulari, foliis ensiformibus, capitulu-

lo ovato. Plantaginella aurea alopecuroides brasiliana, foliis gramineis Breyn. Cent. pl. 50; Moris. Hist. 3: 259, s. 8, t. 16, f. 17. Habitat in Brasilia. Flosculus non potui perspicere in Herb. Pisonis apud Burmannum." Reichard (1779) repeats Linnaeus' description and comments. Sprengel adds "Quito", apparently based on a specimen to which he mistakenly applied Linnaeus' binomial -- a specimen which may well have been one of E. microcephalum H.B.K.

Ruhland (1903) places P. triangularis in his Species dubiae and says "Folia ensiformis; pedunculus triangularis; capitulum ovatum. Brasilien. Nota. Planta omnino dubia. Dubium etiam utrum species (potius) ad genus Paepalanthum an ad Eriocaulum an aliud genus pertineat." He uses the name, Paepalanthus triangularis, for it. Kunth (1841), at the end of his detailed description of Eriocaulon microcephalum H.B.K., notes "Sprengel (Syst. 3. 775) infauste cum E. triangulari jungit." In his very brief paragraph on Eriocaulon triangulare L. he notes "Be. visio videtur Eriocaulon legitimum. Sprengel (Syst. 3. 775.) huc ducit E. microcephalum Humb. et Kth." Crantz (1766) says merely "Eriocaulon culmo triangulari, foliis ensiformibus, capitulo ovato", citing only Morison's illustration. Steudel (1840), on page 585 of his work, gives E. triangulare as a synonym of E. microcephalum, but on page 586 lists it as a valid species! Sprengel's description (1826) is: "E. scapis 3-angularibus caespitosis folia lanceolato-linearibus superantibus, capitulo ovato sericea Brasil. Quito" and claims it to be conspecific with E. microcephalum H.B.K.

Lamarck (1791) gives the French vernacular name, "joncinelle triangulaire", for P. triangularis, while Lippert (1786) gives the German name, "3winklichte Kugelbinse", for it. The specific epithet of Eriocaulon plantaginella is often uppercased, as, for instance, by Jackson (1893) because of its original use as a generic name.

Nothing is known to me of this puzzling taxon except what is given in its rather large but repetitive bibliography. In my opinion it will probably prove to be a species of Leiothrix, possibly in the affinity of L. dielsii Ruhl.

PAEPALANTHUS TRICHOLEPIS Alv. Silv., Fl. Mont. 1: 32--33, pl. 14. 1928.

Synonymy: Paepalanthus trichocephalus Alv. Silv. apud Wangerin in Just, Bot. Jahresber. 57 (1): 477, sphalm. 1937.

Bibliography: Alv. Silv., Fl. Mont. 1: 32--33 & 144, pl. 14. 1928; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; A. W. Hill, Ind. Kew. Suppl. 9: 200. 1938; Worsdell, Ind. Lond. Suppl. 2: 184. 1941; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 14. 1928.

The type of this species was collected by Álvaro Adolpho da Silveira (no. 703) "In campis prope Diamantina", Minas Gerais, Brazil, in April, 1918, and is deposited in the Silveira herbarium. Silveira (1928) comments that the species is "A. P. calvo Koern. bracteis involucrantibus extus dense villosus praecipue differt." In his text he erroneously refers to his illustration as "Tabula XV" -- plate 15 actually depicts P. albo-villosus and is correctly referred to as "Tabula XV" in his discussion of that species. Paepalanthus tricholepis is depicted on plate 14.

As far as I know, this species is known only from the original collection.

PAEPALANTHUS TRICHOPEPLUS Alv. Silv., Fl. Serr. Min. 47. 1908.

Bibliography: Alv. Silv., Fl. Serr. Min. 47. 1908; Fedde & Schust. in Just, Bot. Jahresber. 46 (2): 4. 1924; Alv. Silv., Fl. Mont. 1: 151--152 & 414, pl. 95. 1928; A. W. Hill, Ind. Kew. Suppl. 8: 169. 1933; Wangerin in Just, Bot. Jahresber. 57 (1): 477. 1937; Worsdell, Ind. Lond. Suppl. 2: 184. 1941; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Résumé 103 & 490. 1959; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 959. 1971.

Illustrations: Alv. Silv., Fl. Mont. 1: pl. 95. 1928.

The original publication of this taxon has not been available to me, but it seems most probable that Silveira's citation in his 1928 work is the type collection, viz., Silveira 353 from "In pratis arenosis, locis siccis, Serra do Cipó", Minas Gerais, Brazil, collected in April, 1905, and deposited in the Silveira herbarium, although on page 414 of the same work he cites his no. 356, also from the Serra do Cipo and collected in 1905.

Irwin and his associates describe the plant as a tufted herb, the inflorescence to about 15 cm. tall, the heads gray, and found it growing on sandy slopes, at 1200 m. altitude, flowering in February.

Citations: BRAZIL: Minas Gerais: Irwin, Maxwell, & Wasshausen 20075 (N, Z), 20076 (Ld, N); A. Silveira 353 (B--isotype, Z--isotype).

PAEPALANTHUS TRICHOPETALUS Körn. in Mart., Fl. Bras. 3 (1): 399--400 [as "trichopetalum"]. 1863.

Synonymy: Paepalanthus trichopetalum Körn. in Mart., Fl. Bras. 3 (1): 399 & 507. 1863. Dupatya trichopetala (Körn.) Kuntze, Rev. Gen. Pl. 2: 746. 1891. Dupatya trichopetala Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902. Paepalanthus trichopetalus Alv. Silv., Fl. Mont. 1: 154 [as "trichopetalus"], sphalm. 1928. Paepalanthus trichopetalus Alv. Silv. ex Moldenke, Résumé 328, in syn. 1959.

Bibliography: Körn. in Mart., Fl. Bras. 3 (1): 290, 308, 399--400, & 507. 1863; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in

Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 201, 204, & 292. 1903; Alv. Silv., Fl. Mont. 1: 154 & 414. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16 & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Phytologia 4: 206. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 328, & 490. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 402. 1960; Moldenke, Phytologia 20: 366. 1970; Moldenke, Fifth Summ. 1: 168 (1971) and 2: 591 & 959. 1971; Moldenke, Phytologia 30: 111 (1975) and 33: 48. 1976.

This species is based on G. Gardner 5268 from Minas Gerais, Brazil, deposited in the herbarium of the Botanisches Museum in Berlin where it was photographed by Macbride as his type photograph number 10658. Ruhland (1903) cites only the type collection and comments "Etiam ego hujus speciei nihil vidi nisi 2 folia et 1 pedunculorum capituliferum". Silveira (1928) cites A. Silveira 492 from Diamantina, Minas Gerais, Brazil, collected in 1903.

Additional citations: BRAZIL: Minas Gerais: G. Gardner 5268 [Macbride photos 10658] (B--type, N--photo of type, W--photo of type, W--photo of type). MOUNTED ILLUSTRATIONS: drawings & notes by Körnicke (E).

PAEPALANTHUS TRICHOPHYLLUS (Bong.) Körn. in Mart., Fl. Bras. 3 (1): 319. 1863.

Synonymy: Eriocaulon trichophyllum Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 636. 1831. Paepalanthus trichophyllus Körn. in Mart., Fl. Bras. 3 (1): 318. 1863. Dupatya trichophylla (Bong.) Kuntze, Rev. Gen. Pl. 2: 746. 1891. Dupatya trichophylla Kuntze apud Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902.

Bibliography: Bong., Mém. Acad. Imp. Sci. St. Pétersb., ser. 6, 1: 636. 1831; Bong., Ess. Monog. Erioc. 36. 1831; Steud., Nom. Bot., ed. 2, 1: 586. 1840; Kunth, Enum. Pl. 3: 573, 579, & 614. 1841; D. Dietr., Syn. Pl. 5: 268. 1852; Steud., Syn. Pl. Clum. 2: [Cyp.] 283 & 334. 1855; Körn. in Mart., Fl. Bras. 3 (1): 318--319 & 506. 1863; Kuntze, Rev. Gen. Pl. 2: 746. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 879 (1893) and imp. 1, 2: 402. 1894; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 145. 1902; Ruhl. in Engl., Pflanzenreich 13 (4-30): 184--185, 287, & 292. 1903; Alv. Silv., Fl. Mont. 1: 414. 1928; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 145. 1941; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 879 (1946) and imp. 2, 2: 402. 1946; Moldenke, Known Geogr. Distrib. Erioc. 16, 41, & 55. 1946; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 88 & 212. 1949; Moldenke, Phytologia 4: 206. 1953; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 145. 1959; Moldenke, Résumé 103, 293, 328, & 490. 1959.

[to be continued]